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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/482,162	01/12/2000	Kikuo Kaise	SON-1720	6631

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EXAMINER

CHUNG, DAVID Y

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 06/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/482,162

Applicant(s)

KAISE ET AL.

Examiner

David Y. Chung

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4-6, 11-13, 15-17, 22, 23 and 24 rejected under 35 U.S.C. 103(a) as being unpatentable over Bruzzone et al. (U.S. 6,166,797) in further view of Shigeta et al. (U.S. 6,266,121). Bruzzone et al. discloses diffusion barrier layers with microstructured spacing members. Note in figure 3B, the planarization layer 126 formed of the same material as projection spacers 136. Note the electrodes 128 formed in regions between the projection spacers. Bruzzone et al. does not disclose spacing members in the light-shielding layer.

However, providing a column spacer in the light-shielding region as opposed to the pixel region was well known and obvious to those of ordinary skill in the art. Placing a column spacer in the pixel region would block or interfere with the light passing through the pixel and cause the image quality to deteriorate. Furthermore, it was well known to place an optically isotropic spacer in the light-shielding region in order to use the spacer itself as the black matrix as taught by Shigeta et al. (U.S. 6,266,121). Shigeta et al. teaches that optically isotropic spacers allow the spacers to function as a

black matrix so that the spacers shield light on regions between the electrodes other than the pixel regions, thereby improving contrast. See column 33, lines 23 – 32.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to form spacers in the light shielding area as taught by Shigeta et al. in order to improve contrast.

A switch such as a thin film transistor for energizing and de-energizing each pixel was a required component of an active matrix display. Active matrix displays were well known and obvious for being able to produce a better image than a passive matrix display because of the reduced cross talk. It was well known and obvious to place the switching device in the light-shielding region since most switching devices are sensitive to light. Evidence of this is found in the disclosure of Takahashi (U.S. 5,510,916). See column 7, lines 9-16. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to place the switching device in the light-shielding region in order to prevent it from being exposed to light.

Claim 7 and 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Wenz et al. (U.S. 5,268,782) in further view of Shigeta et al. (U.S. 6,266,121). Wenz et al. discloses a micro-ridged polymeric liquid crystal display substrate. See figure 2. Note the projections 56 and electrodes 62. Although not specifically shown, Wenz et al. suggests that the opposing substrate could be microstructured similar to the pixel substrate. This would create a device with first and second projections as shown in figure 2. Furthermore, Wenz et al. discloses a common electrode comprising a

conductive film formed over the projections in figures 3 and 4. Note electrode 80 in figure 3 and electrode 110 in figure 4. This electrode was necessary in order to create an electric field across the liquid crystal layer, thereby modulating the light and forming a display image. See above regarding spacers formed in light-shielding regions.

Claim 3, 8-10, 14 and 19-21 rejected under 35 U.S.C. 103(a) as being unpatentable over Bruzzone et al. (U.S. 6,166,797) or Wenz et al. (U.S. 5,268,782) in further view of Shigeta et al. (U.S. 6,266,121) and Katagiri et al. (U.S. 4,763,995).

Katagiri et al. suggests making the projections 404 of synthetic resin. See column 11, lines 8 – 21. It was well known and obvious to make projections of synthetic resin because synthetic resin was much easier to pattern with various known photolithography techniques. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to form column spacers from synthetic resin in order to minimize manufacturing costs. Katagiri et al. suggests making the insulating film 403 from an inorganic compound. See column 11, lines 29 – 35. It was well known and obvious that forming a planarizing film of organic material would have caused ion migration into the thin film transistors, causing them to degrade. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to form a planarizing film from an inorganic compound in order to minimize ion migration and prevent the thin film transistors from degrading.

***Respons to Arguments***

Applicant's arguments filed March 18, 2003 have been fully considered but they are not persuasive.

In regards to claim 1, applicant's argument that the area occupied by the spacers in figure 10 of Shigeta et al. does not constitute a light shielding area appears incorrect. Shigeta et al. clearly states that the spacers shield light on regions between the electrodes other than the pixel regions. Therefore, the area occupied by the spacers is a light-shielding region. Additionally, it was well known to those of ordinary skill in the art that the area between adjacent pixels in a liquid crystal display was the light-shielding region since it would have been impossible to attain a reasonable contrast otherwise. The disclosure of Kimura (U.S. 5,777,713) provides further evidence supporting the examiner's position that forming column spacers in the light-shielding regions of a liquid crystal display was well known. Furthermore, claim 1 recites "a light shielding region present between any adjacent ones of said plurality of pixels". Applicant has explicitly defined the light- shielding region to be the area between adjacent pixels in the claim itself. Therefore, the argument that the spacers in figure 10 of Shigeta et al. are not in the light-shielding region appears to be incorrect.

In regards to claim 5, examiner notes that the spacers in figure 10 of Shigeta et al. have an end surface having an area that is about half of the area of the light-shielding region.

In regards to claims 11-23, examiner does not agree with applicant's assertion that the steps recited by these claims are patentably distinguished over the cited

references. Most of the limitations are mere recitations of structural features. Those that are not, such as "preparing a first substrate and a second substrate" and "filling said given gap with a liquid crystal layer in a hermetically sealed condition", are well known and obvious to those of ordinary skill in the art as being requirements during liquid crystal display assembly.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Chung whose telephone number is (703) 306-0155. The examiner can normally be reached on Monday-Friday from 8:30 am to 5:00 pm.

David Chung  
GAU 2871  
06/01/03

  
**KENNETH PARKER  
PRIMARY EXAMINER**